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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,280	10/18/2001	Jay R. Walton	PA010454	7801

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Qualcomm Incorporated
Patents Department
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EXAMINER	
NGUYEN, STEVEN H D	
ART UNIT	**PAPER NUMBER**
2665	

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/982,280	WALTON ET AL.	
	Examiner	Art Unit	
	Steven HD Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/12/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22,35-40 and 49-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22,35-40 and 49-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/12/04 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2, 6-7, 10-12, 14-21, 35-36, 38-40, 49 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda (USP 6519292) in view of Mirfakhaei (USP 6570912).

Regarding claims 1-2, 35-36, 38-40, 49 and 51-52, Sakoda discloses a transmitter apparatus in a multiple-access OFDM-CDMA system comprising means for coding a data stream in accordance with a particular coding scheme to provide a stream of data symbols (Fig 14, Ref 103); means for spreading the data symbol stream in a frequency domain with one or more spreading codes to provide spread data, wherein the one or more spreading codes are selected from a set of available spreading codes and assigned to the data stream (Fig 14, Ref 104 and 105); means for transforming the spread data in accordance with a particular transformation to provide a stream of OFDM symbols (Fig 14, Ref 107); means for scaling the stream of OFDM symbols in accordance with a particular gain selected for the data stream, wherein the particular gain is responsive to a power control command of a particular multiple access power control scheme and/or a particular transmission rate in a variable rate transmission scheme (Col. 18, lines 33-38 and col. 20, lines 9-61, Fig 14, the control section 102 monitors the transmission rate and generates a power control signal to the transmitter 108 for scaling the transmission power of OFDM signal according to the transmission rate such as 32, 64, 96 and 128 Kbps and TX power a, 2a, 3a and 4a wherein transmission rate and transmission power are associated with each other); means for processing the scaled OFDM symbols to provide a modulated signal; and means for transmitting the modulated signal over the communication channel (Fig 14, Ref 108 and 102 used to control transmission power of each of the data stream and processing the OFDM symbols into the modulated signal for transmitting); (See col. 18, lines 15 to col. 20, lines 61). However, in the same field of endeavor, Sakoda does not fully disclose a transmission power is a value which multiplied with OFDM symbol. In the same field of endeavor, Mirfakhaei discloses appending a cyclic prefix to each OFDM symbol to provide a corresponding transmission

symbol (Fig 3, Ref 354 discloses IDFT for adding a cyclic prefix to each symbol and scaling the symbol with a transmission gain; See col. 11, 23-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method of using a multiplier for scaling the power of the OFDM symbols as disclosed by Mirfakhaei into Sakoda's system and method. The motivation would have been to match the energy of the output signal of IFFT with a transmission power in order to minimize co-channel interference.

Regarding claim 6, Sakoda discloses the data symbol stream comprises coded bits (Fig 14 discloses data stream symbols comprises the coded bits which is encoded by encoded section 103).

Regarding claim 7, Sakoda discloses the data symbol stream comprises modulation symbols derived based on a particular modulation scheme (Fig 14 discloses data stream symbols comprises the modulated symbols based on encoded scheme "modulation scheme" of encoded section 103).

Regarding claim 10, Sakoda discloses the spreading codes are orthogonal codes (Fig 14, ref 105 is PN orthogonal codes).

Regarding claim 11, Sakoda discloses the spreading codes are pseudo-orthogonal codes (Fig 14, ref 105 is PN orthogonal codes).

Regarding claim 12, Sakoda discloses the transformation is an inverse Fourier transform (Fig 14, Ref 107).

Regarding claims 14-16, Sakoda discloses adjusting the spreading based on a data rate of the data stream by assigning a plurality of spreading codes to the data stream or one or more

spreading codes of shorter length to the data stream (Fig 14, the spread code 4, 2, 1, 1 is selected based on the data rate 32, 64, 96 and 128 kbps).

Regarding claim 17, Sakoda discloses the spreading is effectively not performed when the data rate of the data stream reaches a particular threshold data rate (Fig 14, when the data rate equal 192 and 256 kbps, then spreading is not effective any more).

Regarding claim 18, Sakoda discloses scaling transmit power for the data stream based on the data rate (Fig 14, the TX power is associated with data rate).

Regarding claim 19, Sakoda discloses adjusting the gain to adjust transmit power for the data stream (Fig 14, the TX power is associated with data rate).

Regarding claim 20; Sakoda discloses the scaled OFDM symbols are transmitted on a downlink from a base station to a terminal (Fig 14 and 15).

Regarding claim 21, Sakoda discloses the scaled OFDM symbols are transmitted on an uplink from a terminal to a base station (Fig 14 and 15).

4. Claims 3-5, 22, 37 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda and Mirfakharaei as applied to claims 1 and 35 above, and further in view of Jankiraman (IEEE).

Sakoda and Mirfakhaei fail to fully disclose the claimed invention such as covering scaled transmission symbols with a cover code. In the same field of endeavor, Jankiraman discloses covering the scaled OFDM symbols with a cover code has a length that is multiple integer times a length of the OFDM symbol or has a length that is multiple integer times a length of the OFDM symbol or has a length that is multiple integer times a length of the OFDM symbol (Fig 1, PN code generate for cover the OFDM symbol with a cover code).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a cover code to the OFDM symbol as disclosed by Jankiraman into Sakoda and Mirfakharaei. The motivation would have been to increase the throughput of the system for support a multimedia call.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda and Mirfakharaei as applied to claims 1 and 35 above, and further in view of Linz (USP 6219377).

Sakoda and Mirfakhaei fail to fully disclose the claimed invention. In the same field of endeavor, Linz discloses transmitting a pilot along with the scaled OFDM symbols over the communication channel (Fig 3, Ref 322 generates a pilot tone for combining with IFFT output; See col. 4, lines 44 to col. 7, lines 65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a pilot with OFDM signal as disclosed by Linz into the system of Sakoda and Mirfakharaei. The motivation would have been to synchronize between the transmitter and receiver.

6. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoda and Mirfakharaei as applied to claims 1 and 35 above, and further in view of Kalofonos (IEEE).

Sakoda and Mirfakhaei fail to fully disclose the claimed invention. In the same field of endeavor, Kalofonos discloses the spreading codes are Walsh codes which is equal length with the dimension of the transformation (Page 1310, left column wherein the Walsh codes is equal length to IFFT size).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a length of Walsh code equal to the size of the IFFT as disclosed by

Kalofonos into Mirfakharaei and Sakano's system. The motivation would have been to match the spreaded data with number of point of IFFT.

Response to Arguments

7. Applicant's arguments filed 11/12/04 have been fully considered but they are not persuasive.

In response to applicant's argument of pages 10-11 that Sakoda and Mirfakhraei is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Sakoda discloses a method and system for scaling "amplifying the OFDM symbols to **a transmission power "gain"** according to the transmission rate by transmission a control signal to the transmitter and transmitting the scaled OFDM signals over the air (See col. 5, lines 30-42, col. 6, lines 41-53, col. 19, lines 21-27) and col. 20, lines 9-62). Mirfakhraei discloses a transmitter which includes IDFT engine for generating the OFDM symbols and a multiplied the OFDM symbols with **transmission gain "power"** before transmitting via hybrid network. Since, Air interface and Hybrid interface are used for conveying information only. Sakoda suggests a transmission power of the OFDM signal is adjusted according transmission rate. Since, a method and system for using a multiplier for multiplying a signal with a power value is well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to search for a way to scaling the transmission

power of the OFDM signal by using a multiplier to scaling the transmission power of the OFDM signal as disclosed by Mirfakhraei's transmitter into Sakoda's transmitter in order to minimize the co-channel interference. Furthermore, the applicant states that Mirfakhraei discloses a receiver for converting time domain into frequency domain, in reply, Mirfakhraei discloses a transmitter which used IFFT for converting the frequency domain into a time domain and scaling the gain of the OFDM symbol (See col. 11, lines 22-42).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nee (USP 6563786) discloses OFDM system with selectable rate.

Feig (USP 5268938) discloses a multiplier for multiplying a gain value with output of IFFT.

Nagano (USP 6011980) discloses a variable gain for adjusting the gain of the signal based on a control power command.

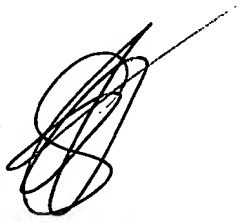
Zhang (US 2002/0145968) discloses a variable gain for adjusting the gain of the signal based on a control power command.

Alamouti (USP 6584144) discloses a variable gain for adjusting the gain of the signal based on a control power command using a multiplier.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven HD Nguyen whose telephone number is (571) 272-3159. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Steven HD Nguyen
Primary Examiner
Art Unit 2665
1/31/05